SAFETY DATA SHEET

According to OSHA Hazard Communication Standard 2012

Revision date: 26-Sep-2014 **Supercedes:** New MSDS **SDS Number:** 30088

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Identifier
Product name: Chromium Trioxide

Other means of identification
Synonyms Chromic acid; Chromium VI oxide; Chromic anhydride; CA Ultra

Recommended use of the chemical and restrictions on use
Product Use Description: Surface treatment Intermediate Catalyst Laboratory use

Details of the supplier of the safety data sheet

Company/Undertaking Identification

Elementis Chromium Inc.
3800 Buddy Lawrence Dr.
Corpus Christi, Texas 78407
USA
Tel: +1 (800) 531- 3188

Elementis Chromium Inc.
5408 Holly Shelter Road
Castle Hayne, NC 28429
USA
Tel: +1 (910) 675-7223

Emergency Telephone Number For hazardous materials incidents only call CHEMTREC Emergency Response Number: 1-800-424-9300 (+1-703-527-3887 International)

sds.chromium@elementis.com

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute Toxicity - Oral	Category 3
Acute Toxicity - Dermal	Category 2
Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
Respiratory sensitization	Category 1
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive toxicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 1
Oxidizing solids	Category 1

Label Elements

EMERGENCY OVERVIEW

Danger

Hazard Statements
Toxic if swallowed
Fatal in contact with skin
Fatal if inhaled
Causes severe skin burns and eye damage
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction
May cause genetic defects
May cause cancer
Suspected of damaging fertility or the unborn child
Causes damage to organs through prolonged or repeated exposure
Very toxic to aquatic life with long lasting effects
May cause fire or explosion; strong oxidizer

Appearance: Flakes **Physical state:** Solid **Odor:**Odourless

Precautionary Statements - Prevention
Obtain special instructions before use
Do not breathe dust/fume/gas/mist/vapors/spray
Wear respiratory protection
Do not eat, drink or smoke when using this product
Do not get in eyes, on skin, or on clothing
Wash hands thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Contaminated work clothing should not be allowed out of the workplace
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Wear fire/flame resistant/retardant clothing
Keep/Store away from clothing/ incompatible /combustible materials
Avoid release to the environment

Precautionary Statements - Response
IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower, Take off contaminated clothing and wash before reuse
Immediately call a POISON CENTER or doctor/physician
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing, Immediately call a POISON CENTER or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician, Rinse mouth
Do NOT induce vomiting
In case of fire: Use Water spray, fog or regular foam for extinction, Carbon dioxide (CO2)
In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Other Information
Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Formula O=(Cr)(=O)=O

Components	CAS-No	Weight %
Chromium trioxide (CrO3)	1333-82-0	100%

4. FIRST AID MEASURES

FIRST AID MEASURES

General Advice Immediate medical attention is required.

Inhalation: IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. If breathing has stopped, apply artificial respiration. Call a physician immediately.

Skin contact: Wash off immediately with soap and plenty of water. Call a physician immediately.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

Ingestion Call a physician or Poison Control Center immediately. Do not induce vomiting without medical advice. If victim is fully conscious, give a cupful of water. If swallowed, seek medical advice immediately and show this SDS or label. Never give anything by mouth to an unconscious person.

Protection of first-aiders: Avoid contact with skin and eyes.

Most important symptoms and effects, both acute and delayed

Most Important Symptoms/Effects: Burning. Risk of serious damage to eyes. Difficulty in breathing. Dizziness. Drowsiness. Coughing and/ or wheezing. Abdominal pain, nausea, vomiting, diarrhea. May cause serious damage to health. Circulatory collapse. Weakness. Increased pulse rate. Coma. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use Water spray, fog or regular foam for extinction
Carbon dioxide (CO2)

Extinguishing media which must not be used for safety reasons
None

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases
Explosive when mixed with combustible material Containers may explode when heated

Unusual Fire and Explosion Hazards:
Emits toxic fumes under fire conditions

Hazardous combustion products:
Chromium oxides

Explosion data

Explosive properties:
May cause fire or explosion; strong oxidizer

Reactivity Hazard:
Explosive when mixed with combustible material

Special protective equipment for fire-fighters
In the event of fire, wear self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personal protective equipment.

Other Information: See Section 12 for additional information.

Environmental precautions

Environmental precautions: Do not allow material to contaminate soil or ground water system. Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system. Do not allow any environmental contamination. Local authorities should be advised if significant spillages cannot be contained.

Methods and material for containment and cleaning up

Clean-up methods: Do not create a powder cloud by using a brush or compressed air. Take up with a HEPA vacuum or mechanically and collect in suitable container for disposal. Do not use combustible materials for containment or clean-up. Clean contaminated surface thoroughly. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Handling: Do not breathe vapours/dust. Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling. Wear personal protective equipment.

Conditions for safe storage, including any incompatibilities

Storage conditions Keep containers tightly closed in a cool, well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep product and empty container away from incompatible materials.

Additional Storage: Keep away from heat and sources of ignition

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Components	ACGIH TLV	AIHA TLV	OSHA TWA	IDLH:
Chromium trioxide (CrO3) 1333-82-0	TWA: 0.05 mg/m³			

Components	OSHA PEL (8h TWA)	OSHA Action Level (8h TWA)	OES - Short-term STEL
Chromium trioxide (CrO3)	0.005 mg/m³ Cr(VI)	0.0025 mg/m³ Cr(VI)	

Appropriate engineering controls

Engineering Measures Maintain adequate engineering controls and/or ventilation to keep hazardous ingredients below their statutory limits. Use an approved respirator whenever exposure limits are exceeded It maybe necessary, dependent on the users assessment of process employed to undertake a program of monitoring to demonstrate that statutory exposure limits are not exceeded

Individual protection measures, such as personal protective equipment

Eye protection Wear chemical goggles and full face shield appropriate for risk of exposure. Tightly fitting safety goggles.

Skin and body protection Footwear and protective clothing should be selected according to the risk of exposure

Respiratory protection: When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hand protection Use chemical resistant gloves

Hygiene measures Handle in accordance with good industrial hygiene and safety practice Ensure that eyewash stations and safety showers are close to the workstation location Contaminated work clothing should not be allowed out of the workplace Wash hands and face before breaks and immediately after handling the product

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state: Solid
Appearance: Flakes
Odor: Odourless
Color: dark red
Odor Threshold No data available

Property	Values	Remarks / • Method
pH	1 (1% solution)	
Melting point/range:	385 ºF / 196°C	
Freezing point:	No data available	
Boiling Point/Range	Not applicable	
Flash Point	Not applicable	
Evaporation rate	No data available	
Explosion limits:	No data available	
Vapor pressure	No data available	
Vapor density	No data available	
Density:	2.7 g/cm³	
Water solubility	Water Soluble (62.5% @ 20 °C)	
Solubility in other solvents	No data available	
Partition coefficient: n-octanol/water	No data available	
Autoignition temperature	No data available	

Decomposition temperature No data available
Viscosity: No data available

Explosive properties: May cause fire or explosion; strong oxidizer
Oxidizing Properties May cause fire or explosion; strong oxidizer

Other Information

Molecular weight: 100
Percent Volatile: Not applicable
Bulk Density 1360 - 1440 kg/m^3

10. STABILITY AND REACTIVITY

Reactivity
May cause fire or explosion; strong oxidizer. These are strong oxidizers and will react vigorously or explosively with many materials including fuels

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
See reactivity above

Conditions to Avoid
Heat, flames and sparks. Exposure to moisture

Incompatible Materials:
Metals; Reducing agents Organic materials Readily oxidizible materials

Hazardous Decomposition Products
No decomposition if stored normally; At high temperatures: Chromium oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation: Fatal if inhaled. May cause irritation of respiratory tract.

Eye contact: Causes burns. Risk of serious damage to eyes.

Skin contact: Fatal in contact with skin. Causes severe burns.

Ingestion Toxic if swallowed. May cause burns to mounth throat and stomach.

Product Information See below

Component Information

Components	LD50/Oral	LD50/Dermal	LC50/inhalation
Chromium trioxide (CrO3) 1333-82-0	52 mg/kg (Rat)	57 mg/kg (Rabbit)	217 mg/m^3 (Rat/4h)

Information on Toxicological Effects

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Corrosivity Causes severe burns. Risk of serious damage to eyes.

Sensitization May cause sensitization by skin contact. May cause allergy or asthma symptoms or breathing difficulties if inhaled

Mutagenic effects May cause genetic defects.

Carcinogenic effects: The table below indicates whether each agency has listed any ingredient as a carcinogen

Components	ACGIH	IARC	NTP	OSHA
Chromium trioxide (CrO3) 1333-82-0		Group 1	Group A - Known to be human carcinogens	Cancer hazard

Reproductive Toxicity: Suspected of damaging fertility or the unborn child

Developmental Toxicity Suspected of damaging fertility or the unborn child.

Chronic Toxicity

Chronic toxicity: Causes damage to organs through prolonged or repeated exposure

Target Organ Effects: Eyes, Skin, Liver, kidney, and respiratory system, Central nervous system (CNS), Reproductive system.

Other Adverse Effects: No information available.

12. ECOLOGICAL INFORMATION

Product Information See below

Ecotoxicity
Very toxic to aquatic life with long lasting effects.

Components	LC50	EC50	Bioaccumulation Concentration Factor	No Observable Effect Concentration/96hr/ 48hr/24hr (NOEC)
Chromium trioxide (CrO3)	37.5 mg/L (Pimephalus Promelas; 96hrs)	0.035 mg/L (Daphnia magna; 48hrs)		60 mg/L (Daphnia magna; 21 days) 0.11 mg/L (Pseudomonas fluorescens; 7 days)

Persistence and degradability:
Hexavalent chromium may react with particulate matter or pollutants to form Cr (III). In general, Chromium is removed from the atmosphere through wet and dry deposition.

Bioaccumulative potential:
Does not bioaccumulate

Mobility:
No data available

General Note:
Do not allow product to reach ground water, water course or sewage system. Danger to drinking water if even small quantities leak into the ground.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues / unused products Do not contaminate ponds, waterways or ditches with chemical or used container Dispose of in accordance with Local and National regulations

Contaminated packaging Should be disposed of in accordance with Local and National regulations

RCRA Hazardous Waste:

RCRA: Characteristic Waste - D007 (Chromium)

14. TRANSPORT INFORMATION

U.S. Department of Transportation Ground (49 CFR):

UN-No:	1463
Proper shipping name:	CHROMIUM TRIOXIDE, ANHYDROUS
Hazard Class:	5.1 (6.1+8)
Subsidiary Class	6.1, 8
Packaging group:	II
Reportable Quantity (RQ)	10
Marine pollutant:	YES

International Air Transportation (ICAO/IATA):

UN-No:	1463
Proper shipping name:	CHROMIUM TRIOXIDE, ANHYDROUS
Hazard Class:	5.1 (6.1+8)
Subsidiary Class	6.1, 8
Packing group:	II

International Maritime Organization (IMO/IMDG):

UN-No	1463
Proper Shipping Name	CHROMIUM TRIOXIDE, ANHDYROUS
Hazard Class	5.1 (6.1+8)
Subsidiary Class	6.1, 8
Packing Group	II
EmS:	F-A, S-Q
IMDG - Marine Pollutants :	Yes

Surface Shipments in Europe (ADR/RID):

UN-No:	1463
Proper shipping name:	CHROMIUM TRIOXIDE, ANHYDROUS
Hazard Class:	5.1 (6.1+8)
Packing group:	II
Hazard Labels:	5.1+6.1+8
Environmental hazard mark:	YES

15. REGULATORY INFORMATION

International Inventories

USA (TSCA):	In Compliance
EU (EINECS):	In Compliance
REACH	Chromium Trioxide is subject to the REACH Authorization process and has been listed on Annex XIV of REACH
CANADA (DSL)	In Compliance
JAPAN (ENCS):	In Compliance
PHILIPPINES (PICCS):	In Compliance
KOREA (KECL):	In Compliance
China (IECSC)	In Compliance
AUSTRALIA (AICS):	In Compliance
NEW ZEALAND (NZIoC):	In Compliance
TAIWAN (NECSI):	In Compliance

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals
NECSI - Taiwan Inventory of Chemicals

Federal Regulations

OSHA 29 CFR 1910.1026 Hexavalent Chromium

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Components	EPCRA (SARA Title III) Section 313 Toxic Chemical
Chromium trioxide (CrO3) 1333-82-0	Listed

SARA 311/312 Hazard Categories

Reactive Hazard
Acute Health Hazard
Chronic Health Hazard

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Components	U.S. - CWA (Clean Water Act) - Reportable Quantities of Designated Hazardous Substances	Toxic Pollutants	Priority Pollutants	Hazardous Substances
Chromium trioxide (CrO3) 1333-82-0	10 lbs	Present	Present	Present

Clean Air Act:

Components	Hazardous Air Polutants
Chromium trioxide (CrO3)	Present

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

TSCA Section 12(b) Export Notification

Components	TSCA Section 12(b) Export Notification
Chromium trioxide (CrO3) (CAS # 1333-82-0)	Section 6 (0.1%) see 40 CFR 749.68

State Regulations (RTK)

California Proposition 65

This Product contains the following substance (s) known to the state of California to cause cancer and/or developmental effects.
Chromium (hexavalent compounds)

Canada

WHMIS hazard class:

C Oxidizing materials
E Corrosive
D1A Very toxic materials
D2A Very toxic materials
D2B Toxic materials

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. OTHER INFORMATION

HMIS: ®

Health: 3 *
Flammability: 0
Physical Hazard: 2

Previous Revision Date: Not applicable

Key/Legend:

N/A: Not applicable
N/D: Not determined
ppm: Parts per million
X: Listed

Prepared by Product Stewardship

The information provided in this Safety Data Sheet is correct to the best of ELEMENTIS' knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The information relates only to the specific product designated and may not be valid for such product when used in combination with any other material or in any process, unless specified in this SDS. ELEMENTIS specifically disclaims any liability for any loss, injury or damage which may result from use or misuse of this product.

All chemicals should be handled only by competent personnel, within a controlled environment. It is the buyer's/user's responsibility to ensure that his activities comply with all applicable federal, state, provincial and local laws, and to determine the conditions necessary for the safe use of this product. ELEMENTIS urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product.

End of Safety Data Sheet